



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

December 19, 2007

Reply To
Attn Of: ETPA-088

Ref: 07-038-FRC

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First St., NE, Room 1A
Washington, DC 20426

Docket No. CP06-365-000

Dear Ms. Bose:

The U.S. Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) for the Bradwood Landing Project (CEQ No. 20070362). Our review has been conducted in accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act.

The DEIS details the NorthernStar Energy, LLC proposal to construct and operate an LNG import terminal and storage facility, and an associated natural gas sendout pipeline. The facility would be located at the former townsite of Bradwood, Oregon, which is situated at Rivermile 38 on the Columbia River. Specific components of the project include a one berth marine facility capable of handling 125 LNG carrier ships per year; interconnecting facilities including piping, electrical, and control systems; two LNG storage tanks with a capacity of 160,000 cubic meters; vapor handling, re-gasification and sendout systems; utilities and other support systems, associated buildings and enclosures, and a 36-mile-long, 30 to 36-inch-diameter natural gas pipeline extending from the LNG terminal to the interconnection with the Williams Northwest Pipeline system north of Kelso, Washington.

The project would be located in an area of key ecological significance. The Lower Columbia River is a federally designated estuary of national significance under the Clean Water Act's National Estuary Program and the Columbia River was designated in 2006 as one of EPA's Priority Large Aquatic Ecosystems (one of seven in the country). This makes the Columbia River a national priority for addressing watershed health. In this context, EPA has identified concerns with the proposed project related to wetlands impacts and mitigation, impacts to air from diesel emissions, dredging, invasive species, ballast water intake, and horizontal directional drilling. In addition, we raise questions and offer recommendations relative to the DEIS development process. These comments focus on the alternatives analysis and incomplete information about interrelated projects. We have discussed these comments in detail in the enclosed attachment.

In light of the concerns raised, we have given a rating of EC-2 (Environmental Concerns, Insufficient Information) to the DEIS. A copy of the rating system used in conducting our review is enclosed for your reference. EPA appreciates the opportunity to submit comments on the DEIS and we commend FERC for adopting an extended comment period on this project. EPA welcomes the chance to continue working with FERC as it completes the final EIS. If I can provide additional explanation of our comments please contact me at 206-553-1601, or Teresa Kubo of my staff at 503-326-2859.

Sincerely,

/s/

Christine B. Reichgott, Manager
NEPA Review Unit

**EPA Region 10 Detailed Comments
Bradwood Landing Project
Draft Environmental Impact Statement**

Wetlands

The Bradwood Landing Mitigation Plan (August 1, 2007) indicates that construction of the LNG terminal facilities would result in permanent loss of about 12.8 acres of wetlands, while construction and operation of the pipeline would result in permanent impacts to 25.7 acres of wetland in Oregon (Table 3-1) and .25 acres of forested wetland in Washington (p. 81). In addition, project construction would permanently impact 1.8 acres of aquatic (nearshore and stream) habitat (Table 3-1). It should be noted that the number of wetland acres identified as potentially impacted in Table 3-1 are different from those identified elsewhere in the mitigation plan, and different from those numbers presented in the DEIS. It is not clear why this discrepancy exists, or why the permanent wetland impacts identified in Table 3-1 of the mitigation plan were not considered in the assessment of permanent impacts and compensatory mitigation credits (Table 2-15 of the mitigation plan).

The mitigation plan proposes to compensate for permanent wetland and waterway impacts (tidal and nontidal) by restoring tidal influence to 62 acres of diked pasture wetland on Middle Svensen Island. Due to the discrepancy in acreage totals noted above, EPA is concerned that while this project would add some ecological benefit to the overall system, it may not provide adequate compensation for all of the aquatic resources expected to be adversely affected by this project. If we apply the proposed ratio of three acres of enhancement to mitigate one acre of impact (p. 74 of the mitigation plan) to the acreage totals from Table 3-1, it would appear that a total of 122 acres should be enhanced. This would indicate that proposed mitigation on Middle Svensen Island falls nearly 60 acres short of overall restoration goals. We recommend that this discrepancy be addressed in the final EIS. If restoration goals are not met, we recommend that in-kind mitigation opportunities be explored within the watershed, or alternative off-site restoration or enhancement options be considered.

We recognize that NorthernStar also proposes to protect existing wetlands and habitat on Lower Svensen Island (170 acres) and Hunt Creek (61 acres). However, according to the wetland functional assessment performed on these sites, they are already functioning at a high level for a number of important wetland parameters. Because there is no indication that there are any potential threats to either Lower Svensen Island or the Hunt Creek estuary from additional development or future impairments under current land use restrictions, it is not clear that utilizing protection as a primary means for compensatory mitigation is warranted. While these sites are suitable conservation areas, there is limited restoration or enhancement potential to gain the necessary ecological lift that this project may require.

Air Quality

The DEIS states that emissions from the marine vessels are not expected to have significant air impacts since traffic would be periodic and transient. However, there may be impacts to local air quality that could be reduced with additional mitigation. Ships are anticipated to deliver LNG to the proposed terminal approximately 125 times per year, with each delivery lasting up to 24 hours. Hotelling emissions associated with on-board generators would be continuous during this period. This level of diesel particulate matter release could have adverse local effects. We recommend that the FEIS give additional consideration to the risks

posed by diesel particulate matter resulting from the project, and adopt measures to mitigate these emissions. Mitigation measures might include the use of shore-side electrical power (i.e. cold-ironing) for LNG vessels hotelling at the Port, use of cleaner fuels on all diesel engines, installing retrofit devices on all diesel engines, and reducing idling for all diesel engines at the facility during construction or operation.

Also, the emissions inventory for LNG ships, tugs, and security vessels (Table 4.10.1-4) raises a number of questions: (1) It is not clear what the period of record is for the air quality data reported; (2) it is not clear where the air quality measurements were recorded; and (3) it is not clear whether the air quality measurements presented in the table are representative of the conditions along the transit route and the terminal area. In order to demonstrate that the data used in the analysis is current, relevant and representative, we recommend that these questions be addressed in the FEIS.

In addition, we recommend that Table 4.10.1-4 include additional information to clarify potential impacts from SO₂. In particular, it is not clear if the emissions reported are one-way or round trip; and it is not clear whether the table represents the full possible spectrum of SO₂ emissions. According to the table, fuel has an assumed sulfur content of 2.7 weight percent (or approximately 27,000 parts per million - ppm). If fuels at other sulfur contents (lower or higher) are likely to be used, we recommend also including these results. The international sulfur limit for fuel oil used in ships is 45,000 ppm, which can emit large amounts of particle pollution when used.

Finally, we note that LNG contains small amounts of heavier hydrocarbons (propane, ethane and butane) which may need to be removed in order to meet the British Thermal Unit (BTU) and gas quality specifications of receiving entities. We recognize that the Bradwood facility would have systems in place to handle these “boil-off” gasses, but we also note that even though the imported gas may meet local specifications when distributed, the BTU content of that gas may still be greater than the BTU content of natural gas currently utilized throughout Oregon. Natural gas with a higher BTU content and/or higher Wobbe Index has the potential to increase NO_x, carbon monoxide (CO) and unburned hydrocarbon emissions. We therefore recommend that the FEIS include a discussion of the current BTU content normally found in Oregon’s natural gas supply, and existing specifications. We also recommend that the FEIS discuss the potential impacts of increasing the BTU content of the gas supply, and address the applicant’s commitment to provide a supply of natural gas within a specific quality range.

Dredging

NorthernStar proposes to pump up to about 350,000 cubic yards of dredged material to an existing upland settling basin at the Wahkiakum County Sand Pit site during construction. Dredge spoils from maintenance dredging (estimated at 80,000 cubic yards every two to four years) would also be placed at this site. Once drained, the sand would be moved from the settling basin and distributed by earthmoving equipment along the shoreline. As noted on page 3-57, the shoreline in this area is subject to a combination of ship wakes, wind, and tidal effects that are currently eroding sand from the river beach at a rapid rate. EPA is, therefore, concerned that these conditions may increase suspended sediments and turbidity in the vicinity of the dredged material placement site. The DEIS makes the assumption that because the dredged sediments would be of coarse grain size, the materials would rapidly settle out of the water (p. 4-71). However, the DEIS does not include a modeling run to verify this conclusion nor a monitoring

plan to evaluate sediment grain size. Further, the fate and transport of this material is not known, and it is possible that the dredged material would be eroded and deposited in the navigation channel, resulting in an increased need for maintenance dredging. We recommend that modeling be done to evaluate potential turbidity and suspended sediment, that erosion potential be evaluated, that a monitoring plan be developed that includes grain size analysis, and that this information be included in the FEIS.

In addition, we note that according to a 2006 estimate (p. 3-58), the Sand Pit site has capacity to accept 700,000 cubic yards of dredged material. If NorthernStar initially deposits up to 350,000 cubic yards of dredged material at this location during construction the LNG terminal, only 350,000 cubic yards of capacity would remain to accept materials generated through maintenance dredging. Assuming each maintenance cycle would generate 80,000 cubic yards, that capacity could be exceeded within four dredging cycles. We are concerned, therefore, that the proposed disposal site may not be able to accommodate all of the dredged material generated by the project over time. We recommend that the FEIS conduct the analysis necessary to identify a backup disposal site should one be required.

Invasive species

Several species of highly aggressive noxious weeds occur in the project area, including Scotch broom, Himalayan blackberry, reed canary-grass, and purple loosestrife (p. 4-91). The DEIS indicates that these invasive species will be removed on the LNG facility site (p. 4-112), the Lower and Middle Svensen island mitigation site (p. 4-151), the Hunt Creek/Clifton Channel mitigation site (p. 4-153) and along the pipeline route (p. 4-117). We note, however, that removal methods are not discussed either in the DEIS, or the “Noxious Weeds and Soil-borne Plant Disease Control Plan” referenced on page 4-117. Page 4-112 indicates that invasive species affecting installed vegetation will be removed by hand, but this is clearly not a tenable solution at the project scale. The DEIS should clarify the applicant’s intent in terms of addressing invasive species on the proposed construction and mitigation sites, and identify the control and eradication methods to be used. These methods should be analyzed in terms of their potential ecological impact, and ultimately incorporated into the referenced control plan (and included as an appendix to the FEIS).

Aquatic invasive species are also of concern. Invasive species appear to be on the rise in the lower Columbia River. Recent reports indicate that 81 organisms, including fish, aquatic plants, crustaceans and worms have been introduced into the lower Columbia River since the mid 1880s (LCREP 2005). We recognize that no ballast water will be discharged into the Columbia River, however, some species can travel on the infrastructure of the vessel or can be discharged from other waste streams. It is unlikely that the rinsing of anchors and chains at the port of origin alone will be sufficient to adequately mitigate the risk caused by the transport and introduction of non-native species. We recommend that the EIS consider, discuss, and require further mitigation measures to adequately prevent the spread of invasive species to and from the Columbia River Estuary. We also recommend that the FEIS include an analysis comparing the physical environment (salinity, temperature) of the likely ports of origin with similar data for the Lower Columbia. If conditions are similar, the potential for impacts is greater. This comparison would assist the applicant in determining if there is any potential for introduction of new species.

Ballast water screening

The DEIS notes on page 4-66 that in any given year of operation, up to 6.3 billion gallons of water would be withdrawn from the Columbia River for LNG ship ballast and engine cooling while at the Bradwood Landing LNG terminal berth. Because this represents a significant entrainment and impingement risk to juvenile fish, NorthernStar proposes construct a system capable of delivering filtered water to the LNG ships. We applaud this measure, but note that use of this system currently would be completely voluntary. NorthernStar would offer contract incentives to the LNG suppliers to retrofit their vessels to connect with the wharf filtered water supply, but no indication is given as to how successful such incentives might be (or if such incentives have been used successfully in the past). This is a point of concern, particularly if LNG is to be purchased off the “spot market”. The “spot market” is generally serviced by uncommitted ships (i.e. those not committed to long-term trades), which are unlikely to see any advantage to retrofitting. We recommend a licensing term that stipulates all carriers servicing the Bradwood Landing LNG terminal will have appropriate screening technology in place within five years.

Frac-Out Contingency Planning

NorthernStar included a horizontal directional drill (HDD) Contingency Plan (Frac-out Plan) as part of its Application for Certificate of Public Convenience. EPA supports the response measures listed in the document, but we find that the plan lacks detail. Specifically, we recommend that the contingency plan address potential modes of failure and mitigation measures for each phase of the drilling process (pilot hole installation, reaming and swabbing, and pullback), as well as mitigation for frac-outs. This includes mitigation for frac-outs to water, marsh, and uplands. In addition, the contingency plan should identify design and construction measures that will be implemented to prevent frac-outs, and monitoring measures that will occur during drilling. EPA can provide working examples of detailed HDD contingency plans if this would be helpful. Finally, we recommend that the revised HDD Contingency Plan be included as an appendix to the FEIS.

Alternative Analysis - Siting Criteria

Section 3.1.3 the DEIS examines proposed siting alternatives. In reviewing this section we are concerned that siting alternatives appear to be dismissed based on qualitative observations such as pipeline length. It would be beneficial to provide robust, quantitative siting criteria presented in comparative form that can be objectively evaluated. We recommend that the FEIS provide a more thorough and objective evaluation of the alternative facility locations based on a set of siting criteria including such factors as navigation security risk, environmental impact, zoning restrictions, local support, berth distance to people, berth distance to channel, access (channel depth, width), dredging requirements and visual impact.

Interrelated Activities - Palomar

In section 2.2, the DEIS identifies nonjurisdictional facilities and interrelated activities. These include electric transmission facilities and three lateral pipelines. The document goes on to correctly note that although these facilities are not regulated by the FERC, they are related to the project and their potential environmental impacts should be considered in this EIS. Since the publication of the DEIS, a fourth potential lateral pipeline has been proposed. The Palomar pipeline is proposing to interconnect with the Bradwood Landing pipeline near Wauna. Because this pipeline, similar to the other three lateral pipelines, would be an interrelated activity, its environmental impacts should be considered, and included in the FEIS.